

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-41 are presently pending in this application, Claims 1 and 24 having been amended by the present amendment.

In the outstanding Office Action, Claims 1-41 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zhao et al. (U.S. Patent 6,538,087).

Claims 1 and 24 have been amended to clarify the subject matter recited therein. These amendments find support in the specification, claims and/or drawings as originally filed, for example, the specification, page 4, paragraph 0016, to page 5, paragraph 0018, as well as Figure 1, and no new matter is believed to be added thereby. If, however, the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work in a joint effort to derive mutually satisfactory claim language.

Briefly recapitulating, Claim 1 of the present invention is directed to a photo-induced thermally developable *film* and recites: “*a polymer matrix having a form of a layer in a solid phase and having a first refractive index; at least one monomer compatible with the polymer matrix and having a second refractive index different from the first refractive index; a procatalyst, where the procatalyst is convertible to a latently active form, the latently active form of the procatalyst is convertible to an active form, and the active form of the procatalyst is capable of polymerizing the at least one monomer; and a cocatalyst, where the cocatalyst is suitable for converting the procatalyst to the latently active form upon exposure to actinic radiation and the latently active form is convertible to the active form upon heating to a first temperature, where the monomer, procatalyst and cocatalyst are dispersed in the layer of the polymer matrix*” (emphasis added in italic).

The Office Action maintains that “Zhao et al disclose a polymeric composition for forming waveguides including a norbornene polymer/oligomer, crosslinking agent, a catalyst system having a procatalyst and a co-catalyst which fall within the scope of the instant claim limitations”

It is, however, respectfully submitted that Zhao et al. fails to teach or suggest “*a polymer matrix having a form of a layer in a solid phase ...; at least one monomer compatible with the polymer matrix ...; a procatalyst, where the procatalyst is convertible to a latently active form, the latently active form of the procatalyst is convertible to an active form, and the active form of the procatalyst is capable of polymerizing the at least one monomer; and a cocatalyst, where the cocatalyst is suitable for converting the procatalyst to the latently active form upon exposure to actinic radiation and the latently active form is convertible to the active form upon heating to a first temperature, where the monomer, procatalyst and cocatalyst are dispersed in the layer of the polymer matrix*” as recited in Claim 1 (emphasis added in italic).

More specifically, Zhao et al. states “the catalysts ... [which] can be prepared as *a preformed single component catalyst in solvent or can be prepared in situ by admixing the catalyst precursor components in the desired monomer to be polymerized.*”¹ To that end, Zhao et al. only describes that “the [catalyst preparation] reaction is carried out by dissolving the pro-catalyst *in a suitable solvent and admixing the appropriate ligand(s) and the salts of the desired weakly coordinating anion with the dissolved pro-catalyst,* and optionally heating the solution until the reaction is complete”² (emphasis added in italic). Zhao et al. further states that “[t]he in situ reactions for preparing the catalysts of Formula I generally follow the same conditions and reaction schemes as outlined for the preparation of the preformed single

¹ Zhao et al., column 21, lines 11-15.

² Id., lines 63-67.

component catalysts, the principle difference being that *the catalysts are formed in monomer in lie of solvent* and that a polymer product is formed”³ (emphasis added in italic). As such, Zhao et al. merely shows a preformed active catalyst and its preparation involving procatalyst and co-catalyst which is suitable for admixing and optional heating *in an appropriate solvent*, and nowhere does Zhao et al. disclose or suggest a solid layer of a polymer matrix in which a monomer, a procatalyst and a cocatalyst are dispersed such that the cocatalyst converts *a procatalyst by exposing to actinic radiation* and that the procatalyst becomes *a latently active form* capable of being *further* converted to an active form *upon heating to an appropriate temperature*.

Therefore, it is respectfully submitted that *the photo-induced thermally developable film* recited in Claim 1 is clearly distinguishable from Zhao et al., and because Zhao et al. fails to disclose the solid polymer matrix and the monomer, procatalyst and cocatalyst dispersed in the solid polymer matrix as recited in Claim 1, its teachings would not render *the film* of Claim 1 obvious.

Turning to Claim 24, Claim 24 is directed to a photo-induced thermally developable film and recites: “*a polymer matrix having a form of a layer in a solid phase*, having a first refractive index and including a cleavable pendant group; and a photoinitiator which produces a cation and a weakly coordinating anion upon exposure to actinic radiation, where the cleavable pendant group of the polymer matrix is at least partly cleaved upon the exposure to actinic radiation such that the first refractive index of the polymer matrix is altered in a portion of the polymer matrix exposed to the actinic radiation, and *the photoinitiator is dispersed in the layer of the polymer matrix*” (emphasis added in italic).

It is respectfully submitted that Zhao et al. does not teach or suggest “a polymer matrix forming a layer in a solid phase, having a first refractive index and including a

³ Id., column 27, lines 18-23.

cleavable pendant group ..., where the cleavable pendant group of the polymer matrix is at least partly cleaved upon the exposure to actinic radiation such that the first refractive index of the polymer matrix is altered in a portion of the polymer matrix exposed to the actinic radiation, and the photoinitiator is dispersed in the layer of the polymer matrix” as recited Claim 24.

Zhao et al. describes a polymer which can be crosslinked during a post polymerization curing step (latent crosslinking).⁴ According to Zhao et al., “a norbornene-type monomer containing a pendant post crosslinkable functional group is copolymerized into the polycyclic backbone whereupon the functional group is subsequently crosslinked via well known techniques,”⁵ and “[b]y post crosslinkable functional group is meant that the functional group is inert to the initial polymerization reaction but is receptive to subsequent chemical reactions to effect the crosslinking of adjacent polymer chains.”⁶ However, nowhere does Zhao et al. disclose or suggest a polymer matrix in the form of a solid layer in which a photoinitiator is distributed such that a cleavable pendant group of the polymer matrix is at least partly cleaved upon exposure to actinic radiation to change the refractive index of the polymer matrix. *The photo-induced thermally developable film* recited in Claim 24 is therefore clearly distinguishable from Zhao et al. Furthermore, because Zhao et al. fails to disclose the polymer matrix as recited in Claim 24, its teachings would not render the film recited in Claim 24 obvious.

For the foregoing reasons, Claims 1 and 24 are believed to be allowable. Furthermore, since Claims 2-23 and 25-41 depend directly or indirectly from either Claim 1 or 24, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 2-23 and 25-41 are believed to be allowable as well.

⁴ See, for example, Zhao et al., column 48, lines 21-23.

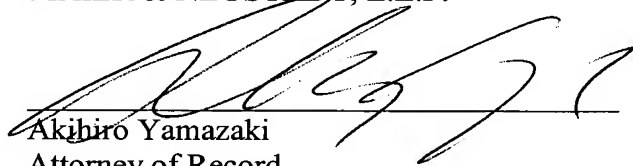
⁵ Zhao et al., column 48, lines 23-27.

⁶ Id., column 27-31.

In view of the amendments and discussions presented above, Applicants respectfully submit that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'Akihiro Yamazaki', is written over a horizontal line.

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